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PREPARATION AND COMPARISON OF POLYHERBAL TABLETS TO TREAT TYPE II DIABETES

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ABSTRACT

The most prevalent issues in the world today are DM and its complexities. While it is not an infectious illness, diabetes is caused by a poor diet and bad eating behaviors. The causes of diabetes are unhealthy lifestyle habits, attributable to the inadequate insulin secretion of the pancreas and insulin receptor insensitivity, process wise it is induced. This results in improper metabolism of glucose and reuptake into the muscles. To control diabetes, various synthetic medications are used successfully. Because of the fear of having other complications, the medications have those side effects that keep their use restricted. In this view, various diseases were treated with herbs and medicinal plants and are found effective and safer too. There are several herbs that are still used to cure diabetes, and the precise mode of action of all those herbs has also been investigated and demonstrated. Chemical leads have been isolated from herbs and have been proven to be effective against diabetes. The tablet formulation has the potential to regulate the amount of blood sugar in diabetes caused by STZ in the current sample. This was prepared using Tribulus terrestris, Glycerrhia glabra, Ficus religiosa and Piper nigrum extracts and the anti-diabetic property tests indicated that the tablets displayed greater action compared to the normal and individual extracts.

Keywords: *Glycerrhiza*, Tribulus, Anti-diabetic Tablets, Piper, Diabetes.

INTRODUCTION

Diabetes Mellitus is a metabolic condition generally referred to as food-related diabetes. For an extended time, it indicates elevated blood sugar levels. The worldwide population of 10 million is most widely seen and affected by this diabetes. DM is classified into 2 forms. They are diabetes type1 and diabetes type2. Type 1 diabetes thus results in less insulin released by the pancreas due to the lack of beta cells, whereas type 2 diabetes affects the production of glucose in the bloodstream. The mechanism of action reveals reduced insulin production in the pancreas and forms insensitive insulin receptors to control the improper process of blood glucose and reuptake by the muscles. DM is also found among the elderly and obese community. CVD, stroke, hyperglycemia, chronic kidney disease, neurological dysfunction, nerve and eye injury, and the development of foot ulcers can be complications. The DM can influence the lifestyle of individuals.

Synthetic medications are used to cure diabetes, but because of these drugs, they also show complications and side effects. For diabetic treatment, the majority of medicinal plants are used to produce medication protection & efficacy in the body. The herbal medication chemicals

are effective against diabetes mellitus. The present research was carried out on animals with various techniques, such as alloxan & streptazotocin, which is the most widely used DM induction process. In order to estimate anti-diabetic activity, the herbal plants of glycerrhia glabra, ficus religiosa, tribulus terrestris and piper nigrum are used to prepare anti-diabetic medication by removing leaves from these plants.

Preparation of compression tablets

They gathered and dried the leaves of all the trees. They powdered the dried leaves and used them for extraction. The fine plant powder was processed by maceration using purified water and ethanol at a ration of 2:1. The plant material was soaked for nearly five days in the solution mixture[7] and followed by intermittent shaking to ensure adequate mixing of the substance in the solvent. Using filter paper, the macerate was then filtered. The filtrate was then dried and the thick paste was used for the preparation of the tablet and the streptozotocin process was examined.

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Experimental animals

To examine the anti-diabetic operation that was procured from the retailer, Albino Wistar rats were used. The weight of the rats was 180-190 g, and they were housed in an air-controlled and humidity-regulated atmosphere in the laboratory setting. The rats were housed in plastic cages and allowed to have free water and pellets of food.

Animals Allotment

Based on weight and sex, the rats were separated. Rats were grouped into six animal groups with 4 animals within each group and ensuring that the animals were allocated randomly on the basis of the weights. The two sex species were similarly separated [8,9]. Group-I-(Normal/control): 1gm in 10ml suspension of sod.CMC in double distilled water that is given to the rats given at 5ml/kg; Group-II-STZ'cin induced diabetes in rats which received only 1gm in 10ml suspension of sod.CMC in distilled water that is given at 5ml/kg; Group-III-STZ'cin induced diabetic rats received Glycerrhia extract-250mg/kg/day p.o suspended in 1%w/v of CMC; Group-IV-STZ'cin induced diabetic rats received Tribulus-

250mg/kg/day p.o suspended in 1%w/v of CMC; Group-V-STZ'cin induced diabetic rats received tablet powder-250mg/kg/day p.o suspended in 1%w/v of CMC; Group-VI-Standard-group-STZ'cin induced diabetic rats received rosiglitazone-2mg/kg p.o) suspended in 1%w/v of CMC.

DM Induction protocol

In rats, diabetes was caused by the use of streptozotocin at a dosage of 45 mg per kg per rodent. The compound was dissolved in the citrate buffer with a pH of 4.5 and injected to cause diabetes using the IP route. Just a single dose of the drug was given. The glucose solution was supplied to the rats to prevent the initial hypoglycemia caused by lowering the level of sugar. The rats with a blood glucose level of 245 mg/dL were taken and the analysis was continued [10,11]. The anti-diabetic activity investigation was performed for 30 days and the normal dosage of the extract was delivered once in the morning. Using the Accu check strip attached to a wireless glucometer, the animals were checked for the amount of blood glucose, and the blood checks were conducted on the beginning day, 7th day, 14th day, 21st day and even on the last day. It noted and registered the reading.

Table 1: Preparation of the Anti-diabetic formulations

Sl no.	Ingredients	Quantities
1	Tribulus Extract	150mg
2	Ficus Extract	100mg
3	Glycerrhia Extract	150mg
4	Piper longum powder	50mg
5	Starch	55mg
6	Talc	Qs to make the punch die quantity.
6	Acacia	30mg

Table 2: Effect of tablets on the Anti-diabetic activity

Groups	Blood sugar level(mg/dL)				
	First day	7 th day	14 th day	21 st day	Last day
Normal control-(1% w/v CMC)	105.04±5.673	111.35±6.72	109.13±3.561	103.41±0.998	101.73±2.435
Diabetic control	325±6.892	328.54±5.941	326.36±7.143	317.75±6.764	318.83±7.267
Tribulus Extract	332.94±6.896	287.35±7.365	263.4±6.572	14.8±5.4	140.2±6.689
Ficus Extract	331.2±7.931	272.12±5.63	240±6.784	178±4.675	121.62±5.156
Anti-diabetic Tablets	326.32±6.672	263.87±2.04	221±1.035	164±7.167	105.89±6.991
Standard drug	323.61±5.143	290.8±6.812	275.78±5.823	203.59±5.18	136.7±6.16

RESULTS & DISCUSSION

There was a rise in the elevation of blood glucose levels in group II with the induction of DM using the drug, which means that there is an improvement in blood sugar level and diabetes has been effectively triggered in the rats. Group 1 sugar levels were natural due to the absence of DM induction. The measurements of higher and lower blood glucose levels are tabulated in Table 2. The extracts were tested for anti-diabetic activity in the control groups, and blood glucose levels were dramatically decreased. Yet there was less inactivity as compared to the pills and the normal treatment. In that population, the regular treatment decreased blood glucose, substantially lowering blood glucose. Blood sugar levels were substantially decreased by the tablet formulations, demonstrating improved and significantly better behavior relative to the normal rug and

person extracts. It has been shown that this tablet formulation is potent, and the tablet is not yet subject to standardization in terms of chemical constituents and pharmacological activity [12].

CONCLUSION

The present study studies the composition of tablets that have the capacity to regulate the amount of blood sugar in diabetes caused by STZ. This was prepared using Tribulus terrestris, Glycerrhia glabra, Ficus religiosa and Piper nigrum extracts and the anti-diabetic property tests indicated that the tablets displayed greater action compared to the normal and individual extracts.

CONFLICT OF INTEREST

Authors declared no conflict of interest.

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